

Activity 2

Volcanic Landforms

Think About It

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- Why do different volcanoes have different shapes?



WHAT DO YOU THINK?

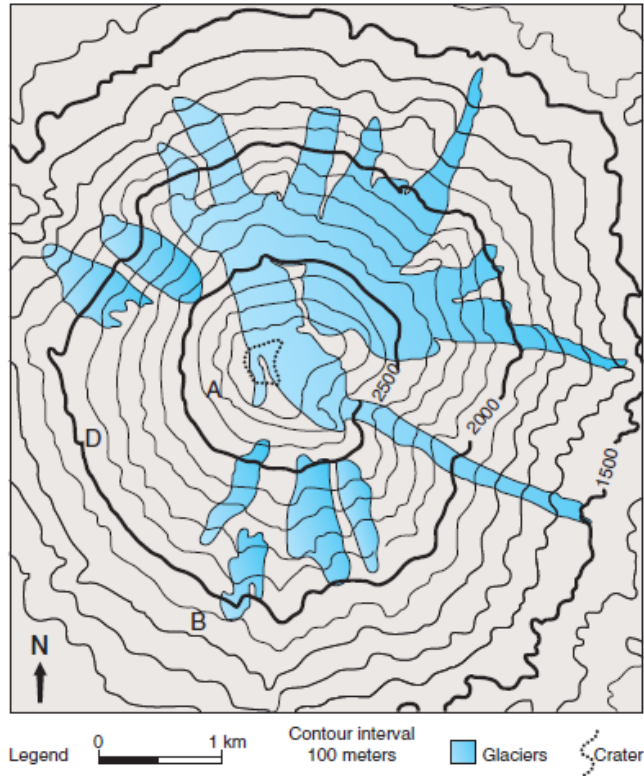
Activity 2

Investigate

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7c. What do the blue regions on the map of Mt. St. Helens represent?

7d. Why do the blue regions cross the contour lines at right angles?

7e. Which part of Mt. St. Helens is steeper, the slope between 1500 m and 2000 m, or the slope between 2000 m and 2500 m? Explain.

7f. What are the lowest and highest elevations on the map of Mt. St. Helens? What is the difference in elevation between these two points?

7g. If lava erupted at point A, would it flow to point B or D? Explain.

Activity 2

Digging Deeper

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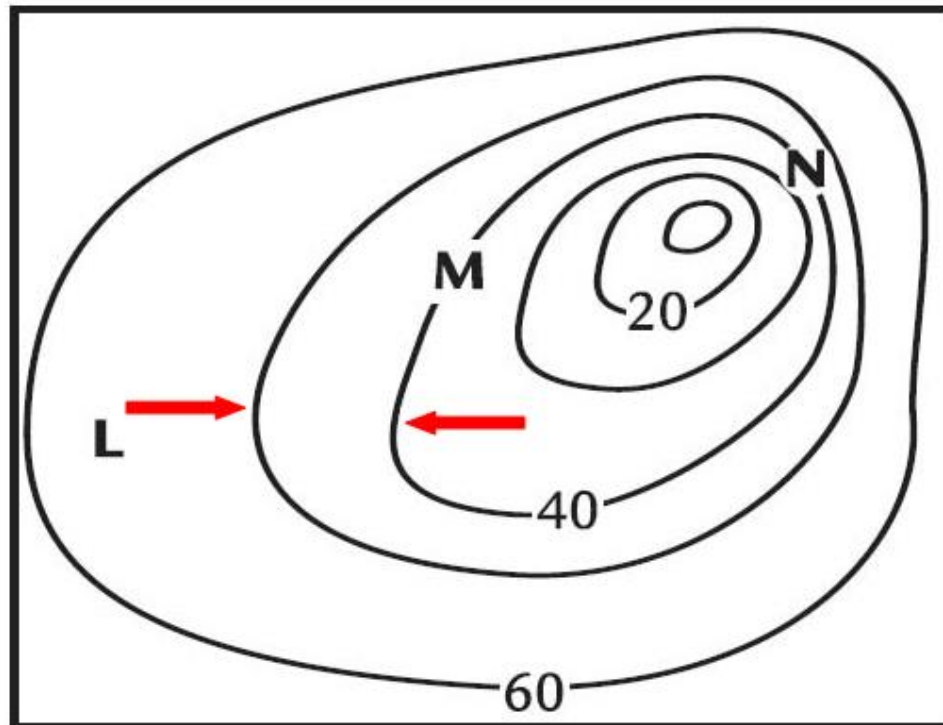
Learning Objective: In writing, SWBAT interpret topographic maps by understanding rules for topographic maps and using academic language.

Contour line

a line on a map that connects points of the same elevation of the land surface

Contour interval

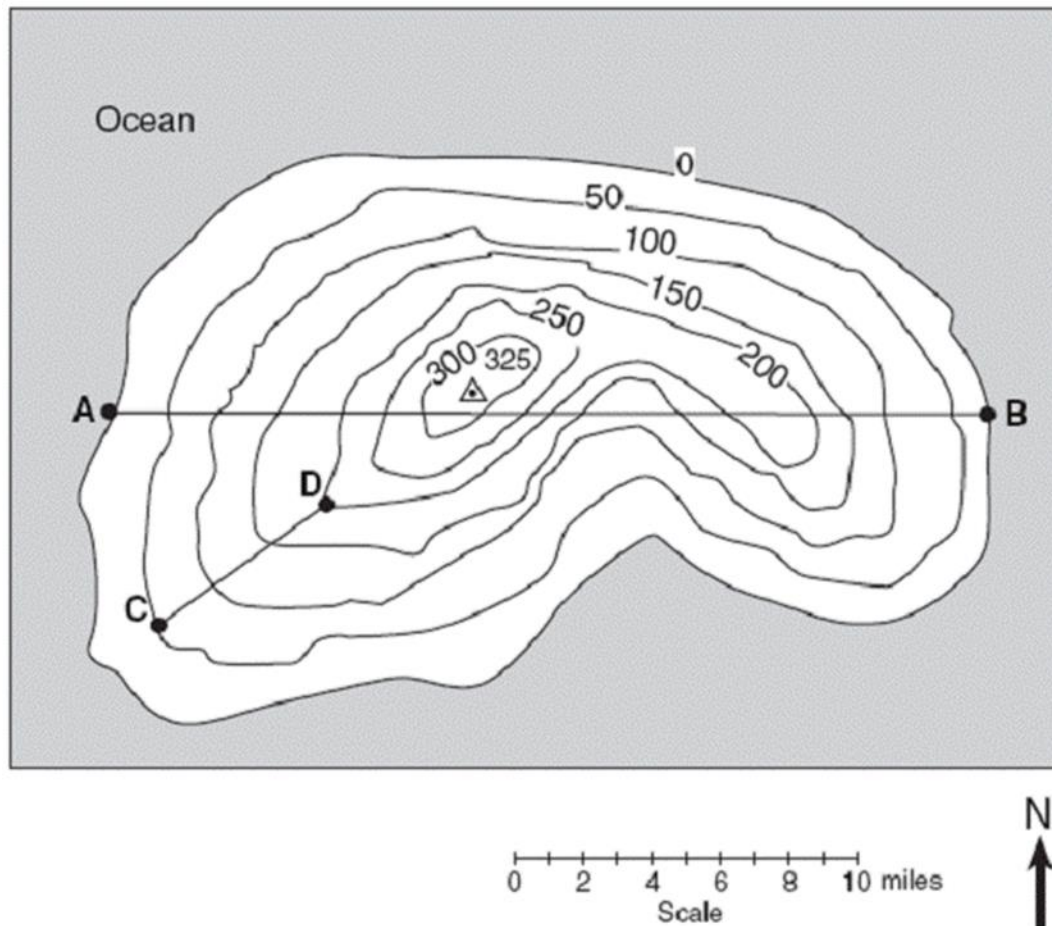
the distance between two contour lines on a topographic map



Contour interval = 10

Topographic map

a map showing the changes in elevation on Earth's surface



Relief

the difference between the highest and lowest points on a contour map

Rules for topographic maps

- contour lines never cross
- the closer together the contour lines, the steeper the slope

- contour lines for volcanic craters or depressions are marked with tick marks - - - -
- every fifth contour line on a map is **darker** and its elevation is always marked

Learning Objective: In writing, SWBAT relate the silica content of magma with the shape and eruptive force of a volcano using academic language.

Volcano's shape

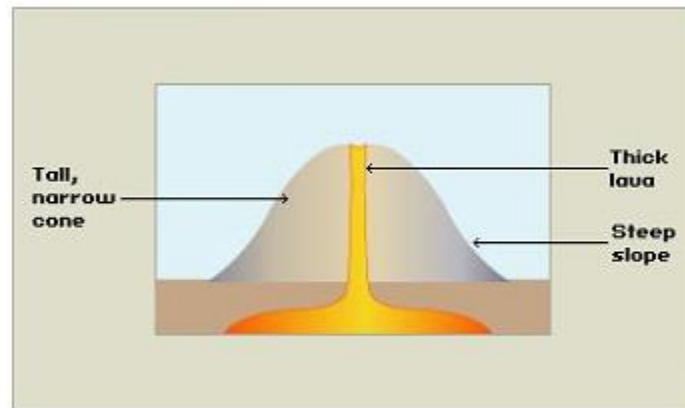
depends on the amount of silica in the magma

Magma with high silica

does not flow very easily



It builds volcanoes that are tall with steep slopes



There is a high amount of gases that are trapped under pressure

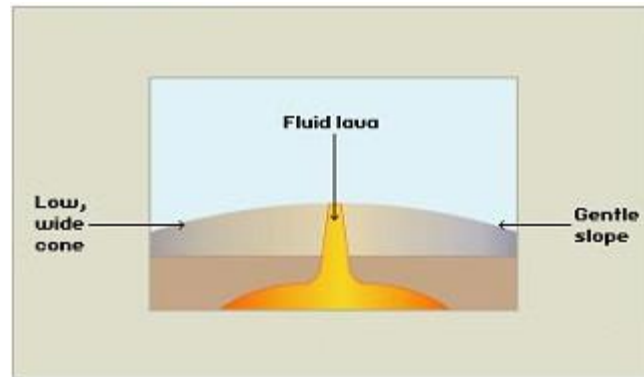
This causes a violent, explosive eruption



Magma with
low silica

flows quickly, easily and far

It builds broad volcanoes with
gentle slopes



There are fewer gases and they escape easily

This causes a quiet, non-explosive
eruption



http://www.classzone.com/books/earth_science/terc/content/visualizations/es0905/es0905page01.cfm?chapter_no=visualization

<http://www.volcanovideo.com/Movies/FlowingLava.mov>

Learning Objective: **In writing, SWBAT identify the three main types of volcanoes and describe how each is formed using academic language.**

Shield volcano

a volcano with gently sloping sides and a wide base

Formed from

low-silica lava

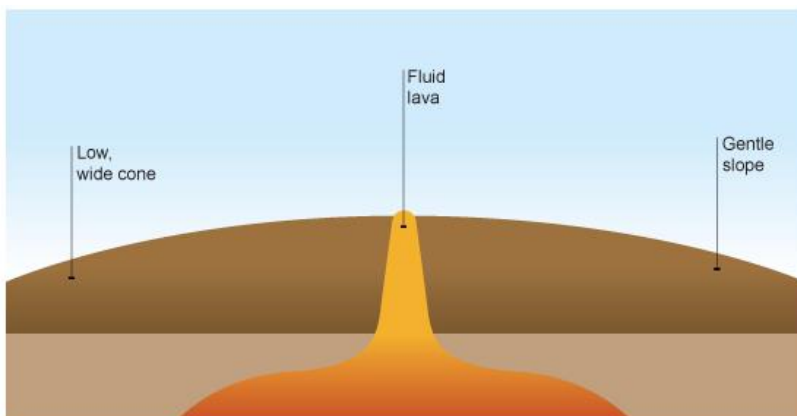
Low-silica lava is very fluid, and doesn't pile up to build steep sides

Type of eruption

quiet, non-explosive

Examples

- Kilauea (Hawaii)
- Mauna Loa (Hawaii)



<http://dli.taftcollege.edu/streams/Geography/Animations/VolcanoTypes.html>

Tephra

pieces of rock and hardened lava

Cinder cone volcano

a volcano made of layers of tephra

Shape

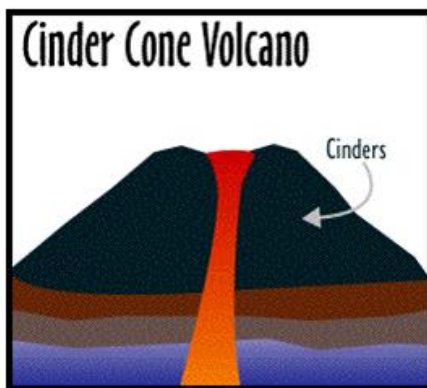
steep, cone-shaped

Type of eruption

violent, explosive

Examples

- Parícutin (Mexico)
- Cerro Negro (Nicaragua)



http://media.pearsoncmg.com/bc/bc_0media_geo/interactivandimations/093_VolcanoTypes_SP_GL_Stu.html?te10#/Cinder-Cone

Composite cone

a volcano made of alternating layers of lava and tephra

Shape

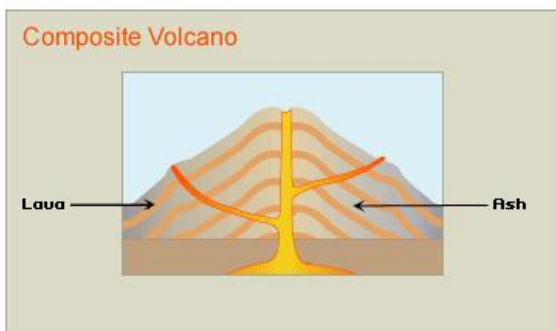
steep and tall

Type of eruption

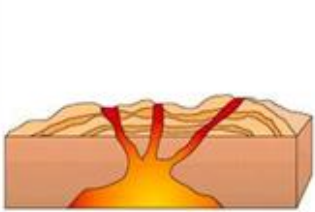
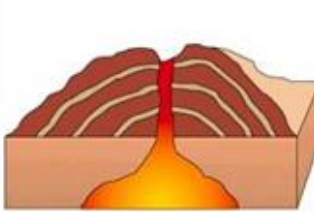
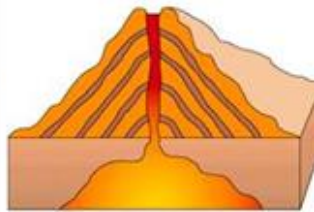
alternating violent and explosive/quiet

Examples

- Mount St. Helens (Washington)
- Mount Rainier (Washington)
- Mount Hood (Oregon)
- Popocatepetl (Mexico)

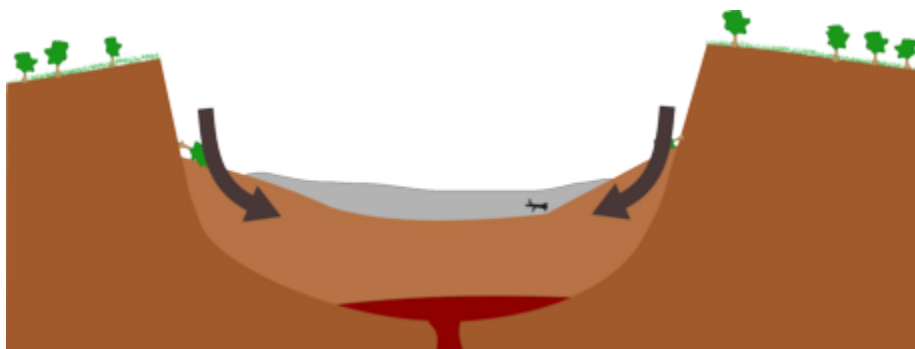


http://media.pearsoncmg.com/bc/bc_0media_geo/interactiveanimations/093_VolcanoTypes_SP_GL_Stu.html?te10#/Composite-Volcano

			
	Shield	Cinder cone	Composite
Shape	wide base, gentle slope	steep, cone-shaped	steep, tall
Made from	lava	tephra	lava and tephra
Type of eruption	quiet, non-explosive	explosive	quiet/explosive

Caldera

a large crater that forms after a volcano collapses in on itself



http://en.wikipedia.org/wiki/File:Origin_of_volcanic_caldera_via_analogue_model.gif



Examples

- Crater Lake (Oregon—caldera that filled with water)
- Ngorongoro Crater (Tanzania)

<http://mediaplayer.pearsoncmg.com/assets/Nii4Z7IXSWW/P2gviuEosVxsp0MPOwUVx>



Activity 2

Check Your Understanding

Date

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1. Explain the meaning of a contour line, contour interval, relief and topographic map.

2. Why does low-silica magma produce broad volcanoes with gentle slopes?

3. Why does high-silica magma produce tall volcanoes with steep sides?

4. How is a caldera formed?

Activity 2

Understanding and Applying

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1. Sketch **ONE** contour map of a volcano that shows:

- a. gentle slope
- b. steep slope
- c. a crater

2. Sketch a topographic map of a shield volcano and a composite cone.